R E M A R K S

Careful review and examination of the subject application are noted and appreciated. Applicants' representative thanks Examiner Tu for the indication of allowable matter.

SUPPORT FOR CLAIM AMENDMENTS

Support for the amendments to the claims can be found in the specification as originally filed, for example, on page 9, lines 5-7, page 11, lines 6-9, page 12, line 4 through page 13, line 10. Claim 23 includes the allowable matter of claim 9. As such, no new matter has been introduced.

CLAIM REJECTIONS UNDER 35 U.S.C. §112

The rejection of claims 12 and 14 under 35 U.S.C. §112, second paragraph, has been obviated by appropriate amendment and should be withdrawn. Claim 12, has been amended to replace "said test run" with "executing said first test run, said second test run and said third test run". Claim 14 has been canceled.

CLAIM REJECTIONS UNDER 35 U.S.C. §103

The rejection of claims 1-8, 10-12 and 14 under 35 U.S.C. §103(a) as being unpatentable over Allen '055 in view of Sullivan is respectfully traversed and should be withdrawn.

Allen teaches a method and apparatus for verifying a single phase clocking system including testing for latch early mode (Title). Sullivan teaches a boundary scan testing using clocked signal (Title).

In contrast, the present invention provides an apparatus comprising a circuit and a plurality of test blocks. The circuit may be configured to be tested. The plurality of test block within the circuit each comprising (i) a plurality of sequential elements and (ii) a plurality of logic elements. Each of the test blocks may be configured to operate (a) in a first mode comprising a shift mode and (b) a second mode comprising a capture mode. The shift mode may operate with multiple scan blocks that are toggled simultaneously. The capture mode may operate with multiple scan clocks with only one of the scan clocks being toggled at a time. Claim 10 provides similar limitations. Allen and Sullivan, alone or in combination, do not teach or suggest such limitations.

Allen fails to teach the presently claimed plurality of test blocks within the circuit each comprising (i) a plurality of sequential elements and (ii) a plurality of logic elements wherein the capture mode operates with multiple scan clocks with only one of the scan clocks being toggled at a time. In particular, Allen fails to teach the presently claimed capture mode which operates with multiple scan clocks with only one of the scan clocks being toggled at a time. While Allen may teach multiple clock signals

(e.g., FIG. 2, CLOCK1 - CLOCK4), Allen fails to teach that any one of the clocks signals (e.g., CLOCK1- CLOCK4) are being toggled one at a time. At best, Allen teaches that **all of the clock signals CLOCK1 - CLOCK4 are delayed** by a variable delay clock block 202 before being received by the latches L1-L4 (see FIG. 2, col. 3, lines 30-44, and col. 6, lines 60-67, emphasis added). Allen is concerned with **delaying** the transmission of the clock signals with various delay timers to deal with clock skew. In contrast, the present invention **toggles only one** of the multiple clock signals at a time in one embodiment. One skilled in the art would recognize that toggling a signal is not the same as delaying a signal.

In particular, the Comprehensive Dictionary of Electrical Engineering defines toggle as a "change of state from logic 0 to logic 1, or from logic 1 to logic 0, in a bit stable device" (a copy of the title page, bibliographic information, and definitions cited from the Dictionary are included as Exhibit A). The Comprehensive Dictionary of Electrical Engineering defines delay as "the time required for a signal to propagate along a wire". Allen fails to teach that only one of the clock signals (CLOCK1-CLOCK4) changes states at time. Allen fails to teach the presently claimed capture mode which operates within multiple scan clocks with only one of the scan clocks being toggled at a time. As such, the presently claimed invention is patentable over the cited reference

and the rejection should be withdrawn. Sullivan fails to cure the deficiencies of Allen.

Regarding claim 2, the Office Action fails to present any line of reasoning as to how the limitations of claim 2 are met by Allen and Sullivan. In particular, the references fail to teach the presently claimed shift mode and capture mode which comprise portions of static timing analysis. As such, the presently claimed invention is fully patentable over the cited references and the rejection should be withdrawn. Since no analysis has been presented regarding claims 2, Applicant's representative respectfully requests that should a subsequent Office Action be deemed necessary, that such subsequent Office Action be non-final.

Accordingly, the present application is in condition for allowance. Early and favorable action by the Examiner is respectfully solicited.

The Examiner is respectfully invited to call the Applicants' representative should it be deemed beneficial to further advance prosecution of the application.

If any additional fees are due, please charge our office Account No. 50-0541.

Respectfully submitted,

CHRISTOPHER P. MAIORANA, P.C.

Christopher P. Maiorana
Registration No. 42,829
24840 Harper Avenue, Suite 100
St. Clair Shores, MI 48080
(586) 498-0670

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defocus the distance, measured along the optical axis (i.e., perpendicular to the plane of the best focus) between the position of a resist-coated wafer and the position if the wafer were at best focus.

DeForest, Lee (1873–1961) Born: Council Bluffs, Iowa, U.S.A.

DeForest is best known for his contributions to the development of radio communications. DeForest's greatest invention was called the audion triode. This vacuum tube was based on an earlier patented tube developed by John A. Fleming. This tube, which was both an amplifier and a rectifier, allowed the development of radios, radar, television, and some early computers. DeForest's life was noted for controversial, and often poor, business decisions.

deformable mirror device a type of device for light modulation, especially spatial light modulation, employing micromechanical structures, such as cantilevered mirrors or mirrors with torsional motions, to deflect incident light rays.

defuzzification the process of transforming a fuzzy set into a crisp set or a real-valued number.

defuzzifier a fuzzy system that produces a crisp (non fuzzy) output from the results of the fuzzy inference engine. The most used defuzzifiers are

1. maximum defuzzifier that selects as its output the value of y for which the membership of the output membership function $\mu_B(y)$ is maximum;

2. centroid defuzzifier determines the center of gravity (centroid), $\bar{y}$ of B, and uses this value as the output of the fuzzy inference system.

See also fuzzy inference engine, fuzzy inference system.

degenerate common emitter a combination of the common-emitter and emitter-follower stages with a very well-defined gain.

degenerate four-wave mixing a four-wave mixing process in which all of the interacting waves have the same frequency. In certain geometrical arrangements, this process leads to optical phase conjugation and in addition can be for certain types of optical information processing.

degenerate modes two modes with different field structures having the same cutoff frequency in a waveguide or the same resonant frequency in a cavity.

degenerate two-wave mixing a special case of two wave mixing in which the two beams are of exactly the same frequency. In two-wave mixing, if the two laser beams are of the same frequency, a stationary interference intensity pattern is formed. This leads to a stationary volume refractive index grating. Such a kind of two-wave mixing is referred to as degenerate two-wave mixing.

degree of membership the degree to which a variable's value belongs in a fuzzy set. The degree of membership varies from 0 (no membership) to 1 (complete membership).

degree of mobility each prismatic or revolute joint has one degree of freedom and provides the mechanical structure with a single degree of mobility.

degrees of freedom the number of independent position variables that have to be specified in order to locate all parts of the mechanism is defined as a number of degrees of freedom. Therefore, the degrees of freedom is defined as the minimal number of position variables necessary for completely specifying the configuration of the mechanism.

delay (1) the time required for a signal to propagate along a wire.

(2) the difference in the absolute angles between a point on a wavefront at the device output

and the corresponding point on the incident input wavefront, expressed in seconds or degrees. Delay can exceed 360 degrees. Given by t_d, we have

$$t_d = \theta_{out} - \theta_{in}$$

delay angle *See* firing angle.

delay locked loop *See* delay-locked loop.

delay power spectrum a function characterizing the spread of average received power as a function of delay. Can be obtained from the scattering function by integrating over the Doppler shift variable. *See also* scattering function, multipath propagation.

delay profile *See* delay power spectrum.

delay range the difference in arrival times between the first and last significant component of the impulse response of a wideband communication channel. Also known as the total excess delay.

delay resolution the capability, measured in units of delay (seconds), of a signal used for channel measurement to resolve received signal components which arrive with different delays. If two signal components arrive at the receiver with a delay separation less than the delay resolution, they will be observed as one signal, superimposed on each other. The actual value of the delay resolution depends on the criterion by which two signal components are defined to be resolved. An approximate measure is given by the inverse of the channel (or signal) bandwidth. *See also* multipath propagation.

delay slot in a pipelined processor, a time slot following a branch instruction. An instruction issued within this slot is executed regardless of whether the branch condition is met, so it may appear that the program is executing instructions out of order. Delay slots can be filled (by compilers) by rearranging the program steps, but when this is not possible, they are filled with "no-operation" instructions.

delay spread a measure of the time through which the duration of a transmitted signal is extended by dispersion in a wideband communication channel. Usually measured as the RMS delay spread, i.e., the second moment of the time-averaged channel impulse response.

delay-line a transmission line of the appropriate length to result in a specific time delay. As an example, a line at 100 MHz that is 90 degrees long (one-quarter wavelength) will exhibit a time delay of 2 ns.

delay-locked loop (DLL) (1) a pseudo-noise (PN) sequence tracking loop typically used in receivers for spread spectrum signals. The tracking loop has two branches that correlate the received signal with two shifts of a locally generated PN sequence: an advanced and a retarded time shift of the phase of the signal being tracked.

(2) a technique for symbol synchronization based on time-shifted and reversed correlation functions of the desired symbol waveform, which results in a control function with an s-shape (termed an s-curve). The control function is used in a feedback loop similar to a PLL to adjust the timing of receiver clock used in sampling the received signal. DLLs are used, e.g., in spread-spectrum receivers to maintain chip synchronization.

delayed AGC *See* delayed automatic gain control.

delayed automatic gain control automatic gain control in which the control mechanism becomes effective only when the input signal is larger than a predetermined level.

delayed branch instruction a form of conditional branch instruction in which one (or exe-

$D), \ldots, x(t - mD)$, where $x(.)$ is, in general, a vector. By specifying the required output at sufficient times t, the network can be trained (using backpropagation) to recognize sequences and predict time series.

time-delay relay relay that responds with an intentional time delay.

1. in control circuits, time-delay relays are used to cause a time delay in the state of the relay when power is applied or removed to the relay actuator;

2. in power system protective relays, the response time usually depends on the magnitude of the measured value. If the measured value is a large multiple of the pickup value, then the relay operates or trips after a short time delay. For smaller multiples of pickup, the relay trips after a longer time delay.

time-dependent dielectric breakdown breakdown of a dielectric is marked by a sudden increase in current when an electric field is applied. The breakdown does not occur immediately upon application of the electric field, but at a period of time later that depends exponentially upon the magnitude of the field.

time-invariant system the system in which the parameters are stationary with respect to time during the operation of the system.

time-of-arrival the time instant of the arrival of the first signal component to the radio receiver. *See also* propagation delay.

time-to-close contact a contact in which the desired time to close the contactor could be set by the user.

time-to-open contact a contact in which the desired time to open the contactor could be set by the user.

timeout the concept of allowing only a certain specified time interval for a certain event. If the event has not occurred during the interval, a timeout has said to have occurred.

timer a circuit that records a time interval.

timing the temporal relationship between signals.

timing diagram a diagram showing a group of signal values as a function of time. Used to express temporal relationships among a series of related signals.

timing error an error in a system due to faulty time relationships between its constituents.

tin whisker a hairlike single crystal growth formed on the metallization surface.

tint the intensity of color. The name for a non-dominant color.

TLB *See* translation lookaside buffer.

TLM *See* transmission line measurement.

TM mode *See* transverse magnetic mode.

TM wave *See* transverse magnetic wave.

TMI refers to an accident at the Three Mile Island nuclear plant in 1979.

TOC relay *See* time overcurrent relay.

toggle change of state from logic 0 to logic 1, or from logic 1 to logic 0, in a bistable device.

TOI point *See* third-order intercept point.

token device that generates or assists in generation of one-time security code/passwords.

token bus a method of sharing a bus-type com-